THE SCHOOL OF TECHNOLOGY

TECH NEWS

CITY COLLEGE OF NEW YORK

VOL. XIII —NO. 6 | WEDNESDAY, DECEMBER 21, 1960 | 222 | BY STUDENT FEES

Travel and Studies Are Transferees Plight

Probably the most difficult period in the college is the first term. During the first term you have to acclimate yourself to college life, its needs, demands, and obligations. For most students the first term at the City College was right after graduation fom high school entering as lower freshmen. Most students still remember the many difficulties they had orienting themselves to the college academic and social life.

However, other students start at City as upperclassman after attending another college for a little while. These transfer students have their first term in City as upperclassman. They too are faced with many problems similar to those of the entering freshman. Nevertheless, since they have had previous college experience many difficulties have already been overcome, but different ones come to take their place.

Having spoken with a number of transfer students we have obtained a fairly good account of the many problems facing the transfer engineering student.

Work Is Tedious

Traveling time had been greatly increased for Brooklyn College transfer students. While it used to take twenty minutes to get to Brooklyn College it now takes at least one hour to get to City College. This, of course, is only an inconvenience, but it gives the newly dislocated student something to squawk about. Not only must traveling time be readjusted, but also the time devoted to studying. One can safely say that every single student transfering to the School of Technology finds the work more difficult and more challenging than in the previous two years. Therefore, more time must be devoted to academic study. It can be seen that the transfer student is faced with a problem of ample time for preparing for his classes. This is the first hurdle to be overcome if the student desires to remain at City.

After speaking with other students, one quickly discovers that the problem facing one transferee might not disturb another. One student who has just transferred here from Brooklyn College had done over "B" work during his first two years at Brooklyn. At City so far, he is averaging well over a "B." This student felt that his first two years at Brooklyn had not hurt him in any way. He felt that his background was up to par with the students in his classes. He did say though that he would have things much easier if he had started out at City because this transition term was almost like starting college all over again. He has found his new school quite enjoyable nevertheless, and the only thing that annoys him is the travelling.

Weak Backkground?

This writer also spoke to a student who had dropped out of

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EE's Will Travel

This Christmas vacation will bring two field trips, sponsored by the College's chapter of the American Institute of Electrical Engineers and the Institute of Radio Engineers. Seeking to try to reach all the students in the electrical engineering department the society has planned a trip to the International Business Machine Corporation in Poughkeepsie, New York and to the Astoria Power generating plant in Astoria, Queens of the Consolidated Edison Company.

The IBM trip will take place on Wednesday, December 28. Students desiring to go on the trip must attend the AIEE-IRE meeting this week to get full information and to sign up for the trip.

The Con Edison trip will also take place on December 28, and students who wish to go on the trip must also try to be at the meeting this week.

The number of students that will be taken on the IBM trip must be limited to about 50, so it

(Continued on Page 7)

EE Is Top Soph

Eta Kappa Nu's award to the outstanding sophomore in last year's electrical engineering class has been presented to Michael Morganstern, now a

Mike Morgenstern

lower junior. Morganstern was named the recipient of the honor at HKN's semi-annual award dinner. The prize included a

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ALL STUDENTS

Applications for summer employment will be accepted from December 12 through May 15 in room 438 Finley.

IASTE Offers Training

By HERB JAVER

How would you like to work in Great Britain, France, Spain, Israel or even Yugoslavia this summer.

6,500 students visiting students from member countries participated last summer in 3,000 industries for training in technical work and industrial techniques of foreign countries.

IAESTE, the International Association for the EExchange of Students for Technical Experience, has, since 1948, conducted a program by which undergraduate students from 26 countries receive on the job training in a country other than their own.

For Engineers

This program, of which City College partakes, is primarily for mechanical, electrical chemical and civil engineering students. There are fewer positions in the field of physics and chemistry open by comparison. Any student may apply, but it is preferred that he complete his junior year. It must be understand that this program is not on a scholarship basis; each student must therefore pay his own transportation costs. Grades will not be taken into consideration.

Work and Travel

The student will work in the country of his choice for an eight week period and will be paid in the currency and wage standard of that nation. A plane will be chartered to reduce the cost of transportation.

Under the IAESTE plan, the college student will have an excellent opportunity for the combined activities of travel, work and job training. A working knowledge of a foreign language is not mandatory for employment in the majority of European countries. Those countries that do require working knowledge of their language as a pre-requisite for employment are Germany, Switzerland and France. It will be beneficial to the student if he can converse with the local population.

The student will leave the United States June 10, and return on September 15. On his arrival, he will have a job awaiting him which was previously arranged by IAESTE. Dean Hem of the Office of Curricular Guidance, stated that in almost all cases, the reaction of students who participated under the plan was favorable.

Dean Hem

For those students desiring to work in other countries, applications and additional information can be obtained at 118 Shepherd Hall, from Dean Hem Applications will not be accepted after January 1st.

IAESTE is a non-profit organization that provides training for six thousand exchange students. It's purpose is to "train advanced university students of the sciences and technology in the industrial techniques of other nations and to build a foundation for international understanding and good

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Employment Forecast Is Gloomy for Grads

By JOY COFSKY

Job opportunities for Engineering graduates looks bad this year according to Mr. Ernest W. Schnaebele of the Placement Office. He says that employment opportunities have dropped since the fall and were bad even then. This is one of the poorest years. Actually, there are more employers from companies on campus this year, but this is not improving conditions.

Mr. Schnaebelle

There are fewer engineering graduates, this term. Yet the entire economic situation is bad this year and that makes it worse for engineers. Mr. Schnaebele paralleled this year to the recession of 1957-58. This year is even worse than 1957-58. Many companies do not hire in January, so this will make it a little easier for June and August graduates.

The Electrical Engineers have the best opportunities of all this year. Competition is increasing rapidly in Chemical Engineering, but it still rates second as far as job opportunities go. Civil Engineering demand is dropping in all fields excepting the government. This is partly due to the lowering of U.S. production of airplanes and the increased interest in rocketships. Civil Engineers were previously used in the design of airplane frames. Mr. Schnaebele said that good opportunities exist for all engineers in government fields. The government is increasing its salaries, but they are still not as good as those given by private industry. Students in the top percent of their class get better salaries.

As far as fields in science go, Mr. Schnaeble said that demand for chemists is good, but jobs for physicists are decreasing due to the fact that Electrical Engineers are graduating at an increasing rate. Many companies would rather hire E.E.s than physicists. Many jobs for math majors, such as programming are decreasing in number.

Mr. Schmaebele has some suggestions for engineering students graduating soon and interested in getting a good job. Graduates should make better preperations in looking for a job. They should try to sell themselves to the interviewer in a much better manner and know more about the companies they are speaking to. Graduates should also be more flexible in their requirements for a job. They should be willing to accept a job even if it is not their first choice. Most important of all, they must look for jobs and not rely on the placement office. The placement office assists them, but it is the student's responsibility to get their own jobs. Engineering graduates should also explore further into government jobs and opportunities.

As far as placement in part-time jobs, Mr. Schnaebele said that this is very difficult. The hours that the student is free must coincide with the hours he is required to work. Because of

(*Continued on Page 2*)

Vector Preview

The January issue of VECTOR will feature an article which will be of interest to all engineering students: that is, the job of getting a job. The job outlook, based on an interview with Mr. Schnaeble who is in charge of the placement office, is good for graduating engineers. However, competition is very keen, and the graduating engineer, even with a degree and numerous qualications, might have trouble securing a position with a good firm. The article will be of great aid in guiding job-seekers through the trials and tribulations which they would have to endure while searching for a position, and will present many good pointers on what an employer and interviewer looks for in the potential employee. An unusual aspect of this article for the adventurous, describes numerous job opportunities available in Europe.

The magazine will also present an articles about a project created by those who are fortunate enough to have jobs. Called

(Continued on Page 2)

Vector...

(Continued from Page 1)

"The Eyes and Ears of a Missile, "it is the story of the care taken in constructions of intertial guidance units systems. Mr. Steve Shepard, present Advisory

Steve Shepard

Editor of VECTOR and author of this article, explains the reasons why these precise, delicate guidance systems must be constructed under the most sterile surgical conditions, including the use of the rubber gloves and face masks by those who handle the minute components. For those who are not acquainted with inertial guidance principles, the fundamentals of Inertial Guidance systems are presented.

A third article of great interest is one about syncro operation. Synero is a mechanical guidance method whereby a mechanism can be controlled remotely by operating an identical mechanism, (such as a small gear that can be operated by directly operating an exact gear of the same size). The article also describes the very interesting uses of the principles involved in Synero.

The January issue of VECTOR promises to be one of the best issues ever published. Be sure to secure a copy.

TBPi Picks

The following students have been elected to Tau Beta Pi for the Fall, 1960:

Theodore Bially, Maurice Bluestein, Michael D'Ambrosio, Charles Del Riesgo, Carl Dimino, Robert Dresnack, Gabriel Epstein, Richard Felder, John George, Arthur Gleeson, Sydney Goldlust, Edward Holmes, Alexander James, Aryeh Jeselsohn, Anatole Kurkov, Dovl Lederman.

Also Noel Leifer, Stanley Leshaw, Irwin Lieber, Warren Liss, William Mandelbaum, Marc Mangot, Stephen Maybar, Stephen Morse, Barry Okin, Moshe Peretz, Luigi Santalesa, Stephen Sass, Ronald Schilling, Robert Schreier, Howard Silver, Robert Smith, Richard Thorsen, Joseph Vallely, Daniel Wainwright, John Walsh, Louis Weiner, Guenther Wilhelm, Lance Ziering, Richard Zipin.

Transfers...

(Continued from Page 1)

engineering. His grades were average at Queens College but when he came here he just could not get started. He said that the work was just overbearing and that he could not keep up with it. He thinks that if he had started at City he would have had a better chance to finish. He said that his background was too weak to keep up with the work. Many people stated that the background given at City is superior to that given at the other municipal colleges. But there were some who felt that their background was just as good if not better than that of the City College students.

In general the marks of the transfer students are definitely lower than that of their City College brethren. Every transfer student polled admitted that high marks were much harder to get at City than at their first college. Most transfer students get the impression that City College men are much more studious than their counterparts at the other colleges. They generally feel that the competition is much harder here.

Friendship Easily

The transfer student finds it a little difficult getting to know and becoming acquainted with his new classmates. He has left behind his high school chums and college fraternity brothers at his first college, but still keeps in touch. Usually his weekends are spent at first with his old friends. As he gets assimilated into CCNY life, he becomes friendlier with his City College classmates and his free time is spent more and more with his new friends from the College. One transfer student from Brooklyn who initially went to Brooklyn Tech High School, felt that coming to City was like attending a homecoming due to the horde of old classmates.

A Poem
Ode to Mathematics

By MARCIA SCHONFELD

On f of x
confer a hex
and damn it all to hell.
On d of e
I do decree
to go with x as well.
And old x square
will have its share
of my revengeful actions.
I'll square it up
then pair it up
into complicated fractions.
Now all of them
I do condemn
(and I dare them to try evasion)
to a life of hell
and madness as well
as they live in unbalanced
equations.
AND MORE . . .
These logs
are clogs
upon my brain, their logic can't
be seen.
If d of e
is e of t
then tell me, what does u mean?

Employment . . .

(Continued from Page 1)

this, students may not get jobs of their first choice. Summer employment will also probably be hard to get this year. Summer jobs are affected by general economic conditions. This makes any summer employment difficult to obtain this year.

Summer employment is always hard to get, but Mr. Schnaebele feels that this year it will be harder. Companies will hire only the very top students.

Mr. Schnaebele recommends graduate work only for some pupils. It is entirely up to the individual he says.

For The Honored

By JOE DISTEFANO, III

What is the purpose of an engineering honor society? What does it provide for its members and for the school community? These questions may or may not be difficult to answer, depending on how deeply one wishes to penetrate the surface.

Obviously, the primary function of an honor society is to confer honor on those students who have maintained the high standards of the particular society. This is most certainly the essence of its existence.

Now that we have a group of "gifted" or "hard-working" (or whatever you choose to call them) students under one roof, so to speak, is it not possible to have them perform some worthwhile service to the school community? As a matter of fact, all of the engineering honor societies at CCNY perform some kind of service to the engineering student body. The societies tutor students needing help in basic engineering courses. They catalog the grades of the upper junior through graduating senior classes. They provide pledges to work in places such as the alumni office, placement office, and engineering departmental offices. In general, the engineering honor societies help to increase the overall efficiency of the School Of Technology.

There once was a member of
So-ci-e-ty,
Who worked for his comrades
so dil-i-gent-ly.
He said, "First I am pinned,
Then I am skinned;
Can this or-gan-i-zation be of
no help to **me**!"

. . . Eta Kappa Nu, for example, has recitation hours for its members (instructed by its members) on current topics in electrical engineering which are not yet taught in our undergraduate school. The participating individuals find that they can assimilate a great deal from those who have had the opportunity to learn more advanced material.

But more important, functioning as a working body of over-average individuals, the society can offer its "charge" the opportunity to experience the operation of an "organization." Members can speak and be recognized. By active participation they can learn to cooperate with large groups efficiently and affectively. They can learn Parliamentary Procedure and Roberts' Rules Of Order which could possibly aid them in the future to participate in or run a board of directors meeting, or just a neighborhood community meeting. Totally . . . they can experience **leadership.**

Oh yes, there is one more function of the honor society. The Tau Beta Pi constitution states: "Tau Beta Pi's purpose is to . . . and to foster a spirit of liberal culture in engineering colleges." The only organization contributing to this ideal is Tau Beta Pi with their fairly successful annual Art Contest. There is much to be gained by greater efforts in this direction. If I may venture to "stick my neck out" my fellow warriors, we are "starving" from this malnutrition.

Indian Point...

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this should be zero since there is no where in the plant cycle where the secondary coolant comes in direct contact with the primary coolant. The condensers are of the surface type.

Workers Protected

The health safety laboratory also has a locker room for people who will have to go into the reactor sphere when it is turned off to do various repairs. In one locker room the workers will leave their clothes and walk to the second locker room where they will receive a set of special clothing for the reactor sphere and also badges. There will be only one entrance to the sphere and everyone who enters and leaves the sphere will have to sign in with the guard at the entrance to the sphere. By this method no one can accidently be locked into the reactor sphere. After the workmen finish they will come back to the second locker room, take off the special clothing, be checked for radioactivity, shower, and then be let into the first locker room. The special clothing will be washed by Con Ed and used again.

River Used

The water that flows thuogh the condensers is taken from the Hudson River. After elaborate screening of the water it is passed through the condenser and then let out at about 90 degrees Farenheit into the Hudson River. The Health lab will constantly check this water for radioactivity. The engineers noted that since the water will be well screened the water about the plant in the river will be very clean. In fact he noted that some of the cleanest water in the Hudson and East Rivers are around Con Ed generating stations.

The screens which are used to clean the water are housed in a small separate building by the river. The screens are very large and are moved up and down by another gantry crane which rides on straight tracks. The Con Ed engineers told us that this was the largest gantry crane ever built.

Control Room Viewed

The control room is a maze of electronic devices. Everything in the entire plant will or can be controlled from this room. There are three main panel boards for the reactor and the room is designed that when another reactor is installed one wall can be moved and the controlling equipment can be brought into the same room.

On one board the complete plant cycle is monitored by lights which show malfunctions of the equipment. From that same board equipment can be turned off, turned on, or be completely bypassed. The largest board is the measurement board on which the temperature of the core is monitored, the temperature and pressure of the primary coolant is monitored, and the position of the control rods are shown to the inch. The board is equipped with Brown Electronik recorders which each record a different proces variable (temperature, pressure, etc.) The third board is equipped with television screens on which a whole ety of different scenes in reactor sphere can be seen also the meters which show power being consumed by different pumps and other power devices in the p Since the reactor sphere w sealed the complete control be from this room. Only people are needed to op the whole power plant be the maintainence workers w are always present to take of little things like the s heaters failing.

Computer Control Visuali

The possibility of compl controlling the power plan digital computers was dis ed. The engineers said there are a few plants in United States that are op ing and have been operatin quite a long time by d computers. The computers programmed to take care o difficulty and to provide varying power demands o city it is controlling the p of. Even though the plant at first be operated by me chance of operation by com ers was built into the co panel and it can easily modified to digital com control. New developmen the instrumentation field made this more advisable new plants.

Cost

The cost for the new is terriffic, but Con Ed that with the present cos kilowatt sent out by a their plants averaged, the per kilowatt of the a power plant falls in the price range. The new that Con Ed hopes to build cost much less because a deal of money was spent fo design of the Indian Poin actor and that since the reactor vessel will be the the cost will be much les the additional power plant

Award . . .

(Continued from Page

copy of Terman's "Radio Electronic Engineering."

Nine E.E.'s from last sophomore class were sel for consideration for the a on the basis of grades. The screening of candidates wa complished by interviews study of extra-curricular ords.

Though his teachers ma have been surprised by ganstern's selection, his f certainly were; despite his standing scholastic record no bookworm. An avid hob he participates actively in on- and off-campus activitie is an enthusiastic House- ner, having been the pres of Wittes '62. His favorite h is photography, and his fa diversion, modern art (yes, an engineering student). flexibility is shown by his mer jobs; in the past few mers he has been both a guard and musician (he played accordion for years). When asked abou favorite courses, Morgan said, "A teacher who is interested in what he is tea can inspire me to work Those are the courses I enjoy."

SRAEL:

e Industrial Center Of The Middle East

By TED SEMEGRAN

s is the first of two articles rael — Industrial and Edu- nal. Land of the Bible, fa- land of milk and honey, land for Christians, Jews Moslems alike, a center of ons in today's civilization ese are the terms in which hink of Israel today.

ael is in a very precarious ion. According to Mr. Til- Chief of the Industry, Min- and transportation division e United States Operations ion to Israel, she must ex- to live.

ael is not very rich in min- resources. One of their main ral resources is the produc- of Potash from the Dead and the Negev. Possibly the test problem facing Israel's ms of industrial strength is high cost of power. Oil is d in the Negev and there gas fields near the Dead Sea most of the industrial needs be imported. It costs five a kilowatt hour for elec- l energy in Israel in com- son to only 7 mils per kilo- hour in the United States. means that electric power rael costs seven times more in the United States.

avid Ginsberg, Chairman of Department of Chemical En- ering at the Israel Institute Technology (Technion) has in the United States re- ing manpower to strength- Israel's research program. Ginsberg said that Israel is g to create new products iring a minimum of raw rial imports.

Chemical Industries

ost of the chemical indus- are located near the Haifa area, Israel's leading sea- Chlorine and caustic plants some of the newest addi- s to the fertilizer, pharma- t i c a l and pertrochemical ts already in the area. Re- petroleum finds have spur- petrochemical research v.

me of the recent research ducts going on in Israel are the field of agricultural es. Monomers (a simple un- merized form of a com- nd) have been produced from e olive pulp. Paper produc- from corn stalks is also one e newest realities. Mr. Gins- said, "Israel is realtively en and must be initially cre- e."

U.S. Second Choice

oed Remba, Research Asso- e for Middle Eastern Affairs d that the role as an indus- power that Israel plays in ca and Asia is many times ter than the role of the ed States. Israel's program regard to the African na- s has dealt with the provis- of doctors and engineers to t in African development. example. Israel has sent en- ers to assist in Liberian In- ry and doctors to teach nians. She has also offered y scholarships for Africans er schools and universities. can nations would rather go Israel than to the United es for aid and assistance in development of their coun- because Israel and Africa both newly developed and e their industries on a closer When an African visits erican factories, the millions ollars of equipment used all ear on too great a scale for any practical use in his home country. A visit to American industrial plants only have a "tourist impression" on visiting African engineers. A visit to Israeli industry t h o u g h is worthy of practical and useful knowledge. Since both nations are newly developed, their industrial complex is on a similar scale and each country can learn from one another. The production in America deals in billions of dollars while in Africa and Israel, it is at most only in millions of dollars.

Water Problem

Another major problem in Israel's technical development is the obvious lack of adequate water supply in the semi-desert lands. In order to supply the needed water, research is increasingly on the upsurge to develop new ways of production from the sea as well as by the diversion of the waters of the Jordan. Among the schemes being investigated for desalting the waters of the sea in Israel are steam distillation at nuclear power stations, solar distillation, compression distillation, freezing processes, drect filtration and electrodialysis. Israel has even made an attempt to modify the salt balance of brackish water by the addition of supplemental salts, thus making the water suitable for irrigation. Brackish water is found in the southern part of Israel which is mainly the Negev Desert. This brackish water is unsuitable for agricultural use before conditioning.

Nuclear Reactor

On Sunday, December 18, 1960 a release stated that Israel had developed a nuclear reactor and in five years' time they could build atomic weapons. Atomic Energy in the hands of the Israelis will mostly be used for peacetime advancements especially in the realm of industries run by atomic power. Nevertheless, Israel will now have a strong claim, with this atomic growth, as the strongest nation in the Middle East.

Israel is now doing research mainly in peacetime nuclear projects. At the Medical Institute of the Hebrew University, work has been done on the influence of radiation on chemical reactions and radioactive isotopes for treatment in medicine. Another achievement in the nuclear field includes studies of the mysteries of nuclear structure and the building of a plant for the production of heavy oxygen (oxygen-18 and oxygen-17).

Leads Mid-East

Israel has increased its electrical generating capacity by four times in the past ten years. In ten years, a production of one million kilowatt hours is foreseen. There will be enough fuel available for at least twenty years. When is the present and prospective situation with regards to nuclear-generated fuel energy going to be utilized advantageously? Up until now and for a few years to come there is nothing to warrant a conclusion that the cost of reactor power would be better than present conventional fuel power. Possibly by 1965 though, such a plant using a nuclear reactor might become a reality.

One of the many fields that Israel leads the rest of the Middle East is in the production of electrical energy. Israel produces 700 kwh per capita while the closest Middle Eastern country, Iraq, produces only 97 kwh per capita. (Egypt produces only 65 kwh per capita.)

Technion

Israel looks to the Technion (ISRAEL INSTITUTE OF TECHNOLOGY) for the future progress of the country. The Technion is the instrument by which the people of the once arid land will build a land of plenty, the golden land exemplified in the Bible. "The land of milk and honey."

The next issue of TECH NEWS will bring you the story of the Technion. Ben Gurion, Prime Minister of Israel said of

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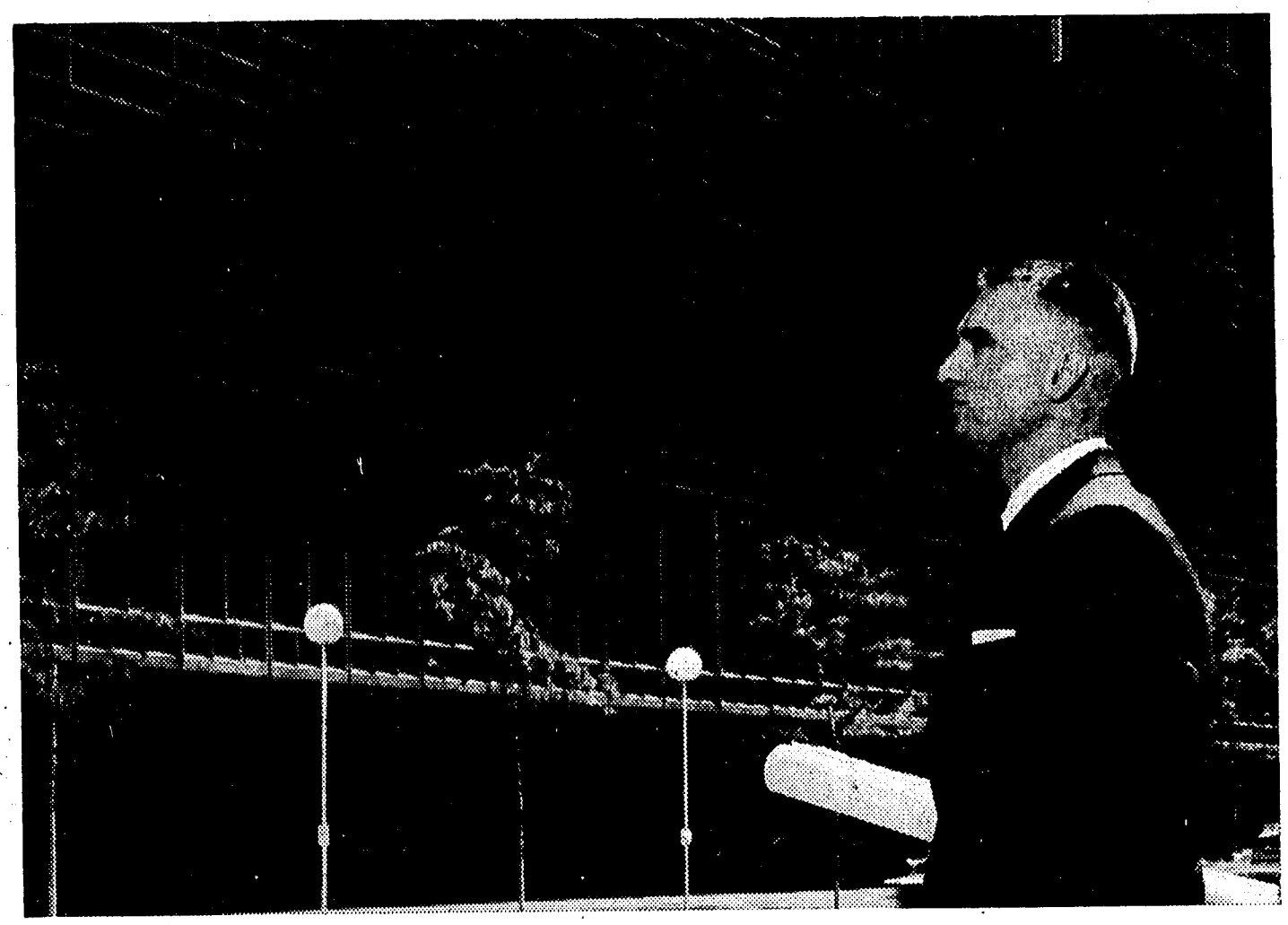

"FIND THE ANSWER, JIM—AND BRING IT BACK"

When Jim Boardman took his B.S. in Electrical Engineering at Colorado State, there was one idea uppermost in his mind. He wanted a job in which he could work his way into management via the engineering route. As he puts it, "I didn't want to stick with straight engineering all my life."

After talking to eight other organizations Jim joined The Mountain States Telephone & Telegraph Company. He soon got the kind of action he was looking for.

His first assignment: How best to improve widely scattered rural telephone service all over Colorado—a sticky engineering challenge. He was given a free hand to work out his own procedures. His boss simply said, "Find the answer, Jim—and bring it back."

Six months later, Jim turned in his recommendations. His plan was accepted.

Next stop: Colorado Springs. Here Jim worked out a plan to expand telephone facilities for this burgeoning community. This plan, too, is now in operation.

Today, at 24, Jim has an important role in planning where, how much, and what kind of telephone service is needed in the Denver area.

Here's how Jim puts it: "We get tough assignments—but we also have the freedom to take hold and do a job. I think the future here is unlimited. If a man wants to do it—it's there to be done."

If you're a guy who can "Find the answer—and bring it back"—you'll want to get with a company where you have the chance. Visit your Placement Office for literature and additional information.

"Our number one aim is to have in all management jobs the most vital, intelligent, positive and imaginative men we can possibly find."

FREDERICK R. KAPPEL, *President*
American Telephone & Telegraph Co.

BELL TELEPHONE COMPANIES

TECH NEWS

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The Damage Is Done

The candidates have gone home. The voting is done. TECH NEWS, due to the heavy snowfall, did not come out at a time when a viewpoint of the voice of the School of Technology was needed. Now, all we can do is to view the damage that has been done.

• • •

Before we congratulate the candidates that have succeeded in what proved to be decisive and surprising victories, it is our duty to discuss the second referendum which was passed almost overwhelmingly by approximately 900 votes. Why will this affect you as an engineer in the School of Technology?

The second referendum is the result of a "I don't care attitude" most engineers have about school politics and the Student Government. We can almost prophesize the attitude S.G. will take, a short while after this referendum becomes part of the Constitution of S.G. **We don't care about the Tech School.**

About a year and a half ago, a ruling was passed which resulted in the election of Student Council members by school as well as class. Since that time, in the fall term of 1960, there were two Tech students on Council. This coming term there will be five Tech students on Council. We believed that the next term would result in a total of at least ten Techmen. Nevertheless, S.G. could not wait to repeal this election procedure. There were too many liberal arts majors who wanted Student Council seats, and of course, it is not fair to prevent qualified or interested students from getting a seat on council. (Almost all of these students who do not get in Student Council by direct voting are usually appointed to fill any empty seats during the term). BUT IT IS FAIR TO ALMOST EXCLUDE THE SCHOOL OF TECHNOLOGY FROM HAVING ANY VOICE ON STUDENT COUNCIL.

Here are the facts:

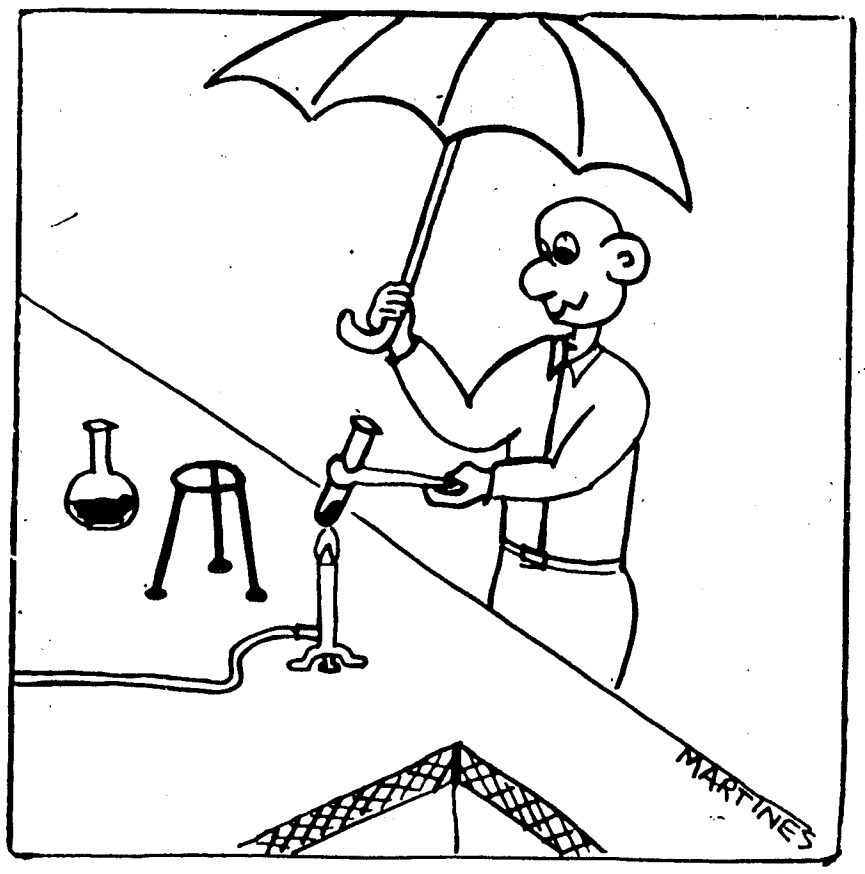
1. If Student Council members are chosen only by class, a majority of those running would be L.A. students. A Techman would have little chance among his liberal arts competitors because the time involved for electioneering, and S.G.'s only location on South Campus surely favors the South Campus students.

2. A Tech student representing his school is much more effective than an engineer representing the entire student body. In the same case, a liberal arts major cannot be qualified to represent the School of Technology.

3. A TECH STUDENT IN REALITY HAS NO CLASS DISTINCTION. AN ENGINEER, FOR EXAMPLE, WHOSE CLASS IS 1961, WILL MOST LIKELY NOT GRADUATE FOR AT LEAST ONE-HALF TO ONE YEAR LATER. HOW CAN ONE THEN CLASSIFY AN ENGINEER INTO THE CLASS OF '61 OR CLASS OF '62, etc.

4. If a time comes and our prophesy become fact, Student Council will have no representative from the School of Engineering. What appears to be a case of mere bad luck (electionwise) will actually be the result of an increasing gap between the two campuses. What in effect may occur is the adoption of two S.G. organizations, one in North Campus and one in South Campus.

There are a few lines of action to follow to correct the wrongs that will be done if this referendum becomes part of the S.G. Constitution. The first step is to ultilize the five Tech students on Council (in the coming term) to explain and convince the rest of the group about the injustices the second referendum will cause. Students can utilize the three day session newspapers to express their views in the "letter to the editor" columns. Finally, a new referendum might show the resultant of a campaign to show the Tech view about the proposed undemocratic reform.



The Plaster Season

Congratulations

We would like to congratulate the new officers of Student Government and hope they see that our opinions on Referendum 2 do not go unheeded.

Dinner Doings

TECH NEWS would like to thank the Engineering Alumni of City College for the invitation to the Student-Alumni dinner. At the supper-meeting six student leaders talked over a few of their problems in which they sought help. We should be very proud to have an active Engineering alumni group that is willing to help student organizations in difficulty (VECTOR and TECH NEWS are indebted to the Alumni for their generous support needed to sustain these publications in the past). The Alumni are now trying to help fight our case for free tuition in the municipal colleges.

We Want Sports

Why not start from scratch again and organize an intersociety and interfraternity basketball league? We feel that such a league would be benecial to the School of Technology. It would promote a more active technology campus and even a healthier crop of engineers. The old Slide Rule League can again become part of the life of the student engineer if the societies (especially AIEE which this term seems to have sprouted from a shell into a very interested and active organization) would take up the cause. We promise to help any proposed project by giving it our fullest support and coverage.

Tiicapathy Hits

TIIC appears to be on the verge of collapsing under the strain of apathy. Ten societies, publications, and fraternities did not show up for the meeting of December 15, 1960. Maybe the representatives of TIIC and the technology student body would show an interest in TIIC if they knew what it could possibly accomplish.

The Technology Intersociety Intefraternity Council could be an effective organ of coordination between Tech groups. TIIC could be a powerful spokesman for the School of Technology in College affairs and in the newly proposed S.G. TIIC could be an organizer of Tech social functions.

The old cry for a theater party could become a reality. An intersociety sports league might again flourish as it did a year and two years ago.

The engineering school of City College has given the College a respected name throughout the country. Why can't we at least be effectively represented in this College.

Transferees Rate City

By MIKE BUCZACZER

We have often heard the e pressions "City is a top co lege," or "City College is o of the best." Can we know f sure what our reputation Some of our students who ha studied at other colleges have o fered to express their opinio about City College in compa son to other schools of high learning. So judge for you self!

Hunter Engineer

Ted Freeze, an engineer, we to Hunter for two years. felt more comfortable there b cause the students worked mo in harmony rather than as i dividuals. He did not find t pre-engineering program dif cult at Hunter College. CCN students, he said, strive f higher grades and competiti is great. Also, the studies quire more work. There see to be plenty of tension a pressure among the students.

Richard Harms, also an e gineer, said after coming fr Hunter, City College work harder. Competition is tough and the students here are ve serious, more than at Hunte "There, the students talk mo about every-day events rath than about their studies."

LIU Transferee

Bill Michael, a liberal a major at the College went the Long Island Universi Brooklyn College of Pharma "The art courses there we conducted on an elementa level which seemed childi compared to the courses fered at City College." The i structors marked easier and courses made few intellectu demands on the students. L students are by far inferior science and liberal arts. "O faculty, he said, is much mo superior." At LIU, he co mented about the lack of soc activities and athletics. "Th student body is more immatu than ours here."

No Difference

Ed Nester, an engineeri student who originally went Hogstra College does not see great difference between t two colleges. He found H stra to be a more social school than City College. "T student body is smaller and y had a better chance to get quainted with a large perce age of the students. It's li comparing a large city to a lit town." "In the College, I ha gotten better grades but I ha also worked harder." He su med up our rating inquiry sa ing that the level of both scho is more or less the same.

A similar opinion was giv by Martin Wojnarowski, an gineering undergraduateg w went to Columbia for one ye "You have to work just as ha in Columbia as in CCNY to a good grade. The stude however worked harder at C lumbia University and were u der a greater pressure." T he believes is the result of t higher tuition fees that Colu bia students have to pay. Y he feels the students at Colu bia are not very friendly a that their are a lot of "sno

(Continued on Page 7)

MERRY CHRISTMAS and A HAPPY NEW YEAR

TECH LIFE

By LARRY KOWITT

LL ME WHY . . .

Only two Tech students (class of '61 and class of '64) are ning for student government. There are eleven seats for the ool of Technology! . . . The cafeteria guards need plainclothes to control the "dangerous" characters that are more commonly termed Tech students. They have even taken the names of ew students sitting at a table and had them responsible for the avior of the group. Think not? Just ask a member of Phi mbda Delta. (This fraternity has threatened to secede from the eteria!) . . . TIIC even exists when nobody cares about them, st of all its members. **The only one who does is its hard working sident Warren Wolff.**

PPY ANNIVERSARY . . .

This year marks the tenth anniversary of the C.C.N.Y. student t of the Society of American Military Engineers. The post was ganized in the Spring of 1950. The society is a social, fraternal engineering organization. They do services for the school, and, ir tech programs are open to all students of the Tech School.

The more notable programs have been: The Boro Chiefs rep. ture on the New York City Civil Defense Public Works Emergency Division. This organization is responsible for the maintenance of New York City after an atomic attack. Lt. Barunas' ture on the then new submarine Skate. The R.C.A. demonstration of a new sound, Stereo. There have been many more, too numerous to mention here. These programs are held at 5 p.m. on ednesdays so as not to conflict with the other engineering so-ties.

S.A.M.E.'s field trips have taken the cadet members all over United States. In 1958 they were flown to Fort Leonard Wood, o. They have toured Fort Belvoir, Va., in 1956, '57 and '60. In 1959 cadets were flown to Fort Bliss, Texas. From there they toured White Sands Missile Range in New Mexico and visited El Paso xas and Juarez, Mexico. In '57 and in '59 they saw Aberdeen oving Grounds, Md. They have been to Ft. Dix in '58 and in '60. 1958 the cadets toured the Brooklyn Navy Yard, the U.S. Testg Labs, N.J., the Sinclair and Valentine Ink Plant in N.J., the n Ed Waterside Power Generating Plant, the U.S. Army Engineer Waterways Experimental Station in Vicksberg and Jackson, ss., and the Remington Rand computer in N.Y.C.

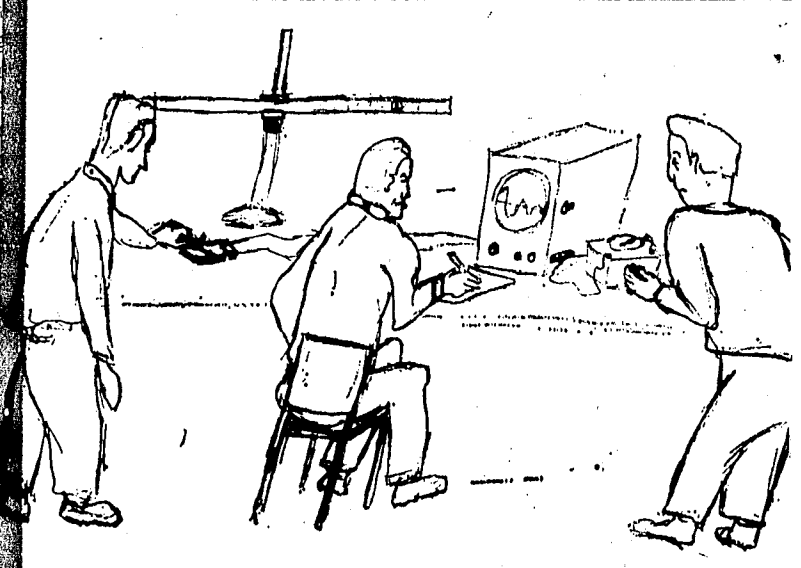
S.A.M.E. has been the best student post for four years (1957 to 60). Their rifle team has also been on top those same four years. is year is a special one to the members. On December 27, they ll have a gathering of their alumni at the Officers' Club on Governors Island. This will be part of their semi-annual Induction nner.

ORE PROBLEMS . . .

The north campus seems to be getting a much needed paint b, but nothing is being done about the pitiable state of Room C200.

ASME will present Mr. William T. Wingle, director of the Naval Sound Laboratories, who will speak on some of the projects of e Navy Laboratory.

A few observations about the North Campus cafeteria . . . ore and more students are bringing in their own food. Some from eir homes and others from the neighborhood stores . . . A portion spaghetti costs 45 cents. With this you get two paper-thin, transcent wafers that have the faint aroma of fishcakes. The spaetti is about half the portion that one gets in a 15 cent can from e supermarket. This means that the student is charged 30 cents have his food heated and served. Oh boy! All this and the ossibility of a 300 dollar tuition fee too . . . As a last resort the udent turns to the infamous hamburger. Here is a 20 cent delight. you are lucky the onions will be strong enough to kill the taste. his may have to be supplanted by a 1/2 inch layer of catsup.) hese dried up, re-cooked, burned delicacies are the biggest boon r the Vegetarian Society. One bite of these roofing tiles and your aste buds will never be the same. Your mouth will feel as if ou ate a pound of peanut butter at one sitting . . . However they re not useless. They make perfect patches for broken windows. hey are perfectly transparent and are perfect insulators . . . he manager, however, is dauntless. He tackles his duties with a engeance. Every chair in the cafeteria is in perfct alignment. So hat if the food is such and the tables are constantly littered with efuse. Tidy chairs a good cafeteria make.



Any one know what the hell we're doing?

TIIC's Prexy

Warren Wolff is one of the most versatile and diversified Presidents that TIIC has ever had. The 22 year old senior, as well as being the chief executive of one of the most important organization on campus, in his four years at City has contributed service and leadership which had entitled him to election to Eta Kappa Nu, the Electrical Engineering Honor Society, Lock and Key (he is presently a pledge), the Student Faculty Committee on the School of Technology, and the Vice Presidency of the Institute of Radio Engineers.

Reminiscing about his college career, Warren stated that he has never regretted his choice of school. He said "I chose City College upon graduation from

Warren Wolff

High School in preference to Pratt Institute and Cornell University to which I was accepted because I thought that the facilities at City College were much better educationally and quite adequate for personal development. I never regretted my choice and if I had to make it again, I would definitely choose City."

History Enthusiast

Besides his numerous activities at school, Warren has many outside interests. He is a student of American History, and at present concentrating his reading to the Naval History of World War II. A skindiver, Warren owns a complete outfit, and Spring, Summer and Fall, he dives from his own boat, which he shares with his younger brother Paul.

"In fall, I also play football almost every Sunday, time and test permitting" commented Warren.

Because Warren feels that a person should have diversified interests, he has chosen to do his work and future studies in the field of control systems which is applicable to all fields of engineering without getting to involved in an narrow aspect of engineering. He would like to teach and attempt to do so while obtaining his master's degree.

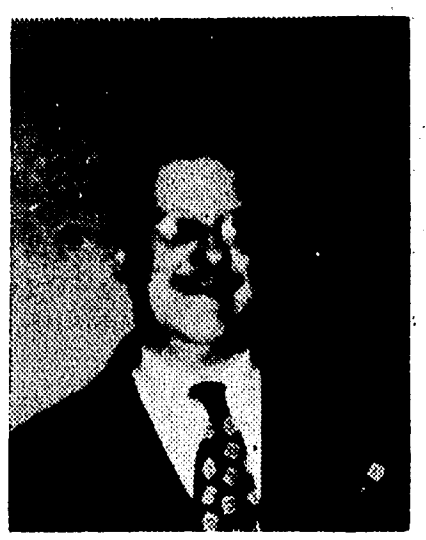
Marriage Upcoming

In four weeks, Warren will be reaching another important milestone in his life . . . he will be getting married. "Due to the understanding and consideration of my fiancee Paula," he remarked "I will be able to continue in day session until I graduate and possibly attend graduate school full time; that's why I call her my beautiful blond angel." For their honeymoon, Warren and Paula intend to go to Canada, in order to practice their newly developed interest in skiing.

Hopes Dim for Tech Writing

A technical writing course is one designed to prepare scientific personnel for writing scientific data as simply and as logical as possible.

The hopes for a technical writing course being made avail-



Prof. Johnson

able at the City College are dim at the present. This type of course can appear either as one replacing a present English course or as an extra writing course in addition to the two present courses now given. It is highly improbable that one of the present English courses would be sacrificed. On the other hand, Professor Johnson, Chairman of the English Department, has given some hope for an additional course. He has said that he would be willing to introduce a course in technical writing if given the slightest indication of encouragement from Dean Allan and from the faculty of the School of Technology.

Dean Allan — No

Dean Allan believes that most students never even contemplate taking a technical writing course. He feels that if a student were really interested in the possible benefits of such a course he could get them better by himself. Dean Allan knows a graduate who owns a company whose sole purpose is technical writing. Therefore, it doesn't appear that room will be made for such a course in the Electrical, Mech-

(Continued on Page 6)

All set to play Santa Claus?

What you need is a red suit, white beard, fat pillow, and a pack full of Esterbrook Classic Pen and Pencil Sets. You can be anyone's favorite Santa if you give the smoothest-looking, smoothest-writing Christmas gift this side of the North Pole. Your choice of 6 holiday colors and 32 changeable pen points, too.

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THERE'S A POINT CHOICE OF 32—ONE IS CUSTOM-FITTED FOR YOU!

student broad fine medium

Atomic Jobs

U.S. Atomic Energy Commission
New York Operations Office
Health and Safety Laboratory
Summer Training Program
for
College Juniors

HISTORY

The Health and Safety Laboratory of the U.S. Atomic Engry Commission's New York Operations Office has a program of summer training for college students majoring in engineering and science. This program is designed to acquaint college students with the work of the AEC and to enable students to acquire practical experience related to their college studies. The Summer training program was first tried in 1949 and has been continued each summer.

Controls Hazards

The Health and Safety Laboratory was established at the New York Operations Office in 1947 and has been responsible for the prediction, measurement evaluation, and control of hazards arising from a wide variety of Atomic Energy activities. It has provided consultation and personnel for field and laboratory studies, for investigation of radiation hazards associated with the use of cyclotrons, Van de Graaf generators and other particle accelerators, and for research in the economics of shielding, waste disposal, and neutron dosimetry.

Radioactive Snow

When radioactive snow was reported in Rochester, New York, in February 1951, the first fallout measurements were made by the Laboratory. Since that time, the Laboratory has had a major part in the Commission's program to determine the rate and extent of the spread of fission products released into the atmosphere from the testing of nuclear devices.

The Laboratory has provided training for scientists from the United States and from foreign nations in the measurements and evaluation of environmental radiation including radiochemical procedures, industrial hygiene techniques, and health physics standards.

The Laboratory has a staff of over 100, not including trainees. Of this number over half are professional and technical personnel engaged in the fields of physics, engineering, chemistry, and biometrics.

Employment Opportunities

The number of trainee positions varies each summer from seven to fourteen and is governed by the number of projects available for summer assignment. Trainees are assigned only when it is determined that projects of value to the Atomic Energy Commission and the trainee are available. Assignments are made to the Divisions of the Health and Safety Laboratory as follows:

Analytical Division — Chemists, Chemical Engineers.

Instrumentation Division — Electronic Engineers, Mechanical Engineers, Physicists.

Environmental Science Division

Field Services Branch—Chemical Engineers, Mechanical Engineers.

Radiation Branch—Physicists.

Statistical Branch — Mathematicians.

Summer Training Program for Engineers-Instrumentation Division

Summer students receive assignments in Electronic Instrumentation in the field of radiation detection. The trainee will receive specific training in the following fields:

1. Radiation Principles
2. Detector Principles
3. Health Physics
4. Ionization Chambers
5. Geiger Instruments
6. Scintillation Counters.

English...

(Continued from Page 5)

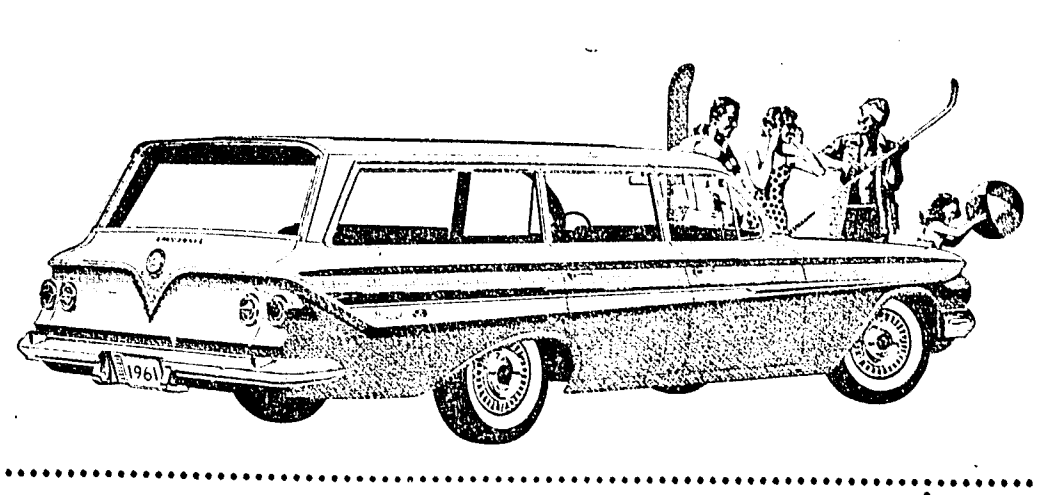
anical or Civil Engineering programs. The Chem.E's are the only ones that presently have room for electives.

Asking questions of students about the technical writing program gave these replys. "Mine as well as many other engineering fields require written reports. Therefore, I feel that such a course would be beneficial . . . " Another student said, "every scientist and engineer has the desire to publish papers pertaining to his field. Such a course would undoubtedly prepare them for this phase . . . "

ONE-STOP SHOPPING FOR A NEW CAR *at your Chevrolet dealer's!*

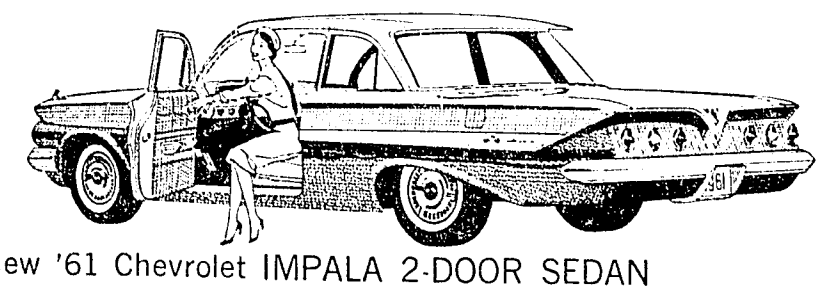
Now you can make your car-shopping rounds the easy way—all under one roof! For '61 your Chevrolet dealer offers nearly any type of car you could want—at the kind of price that'll make you want it all the more. There's a whole new crop of Chevy Corvairs with lower priced sedans and coupes and four wonderful new wagons unlike any ever built before in the land. There are new Chevy Biscaynes—the lowest priced full-size Chevrolets, beautiful Bel Airs, elegant Impalas, six easier loading Chevy wagons, including three 9-passenger models. Come in and pick and choose to your heart's content!

CHEVROLET



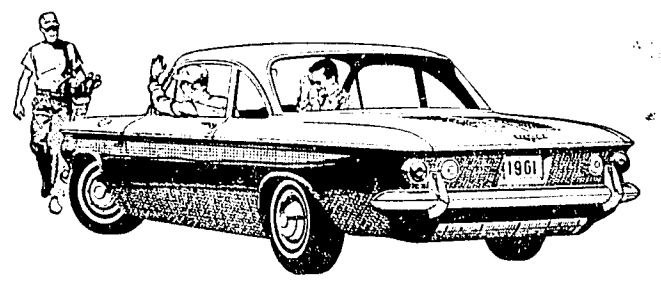
New '61 Chevrolet
NOMAD 9-PASSENGER STATION WAGON

There are *six* easier loading Chevrolet wagons for '61—ranging from budget-pleasing Brookwoods to luxurious Nomads. Each has a cave-sized cargo opening measuring almost five feet across and a concealed compartment for stowing valuables (with an optional extra-cost lock).



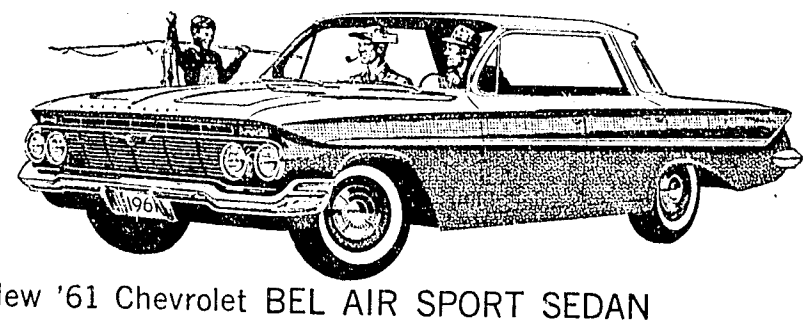
New '61 Chevrolet IMPALA 2-DOOR SEDAN

Here's a new measure of elegance from the most elegant Chevrolets of all. There's a full line of five Impalas—each with sensible new dimensions right back to an easier-to-pack trunk that loads down at bumper level and lets you pile baggage 15% higher.



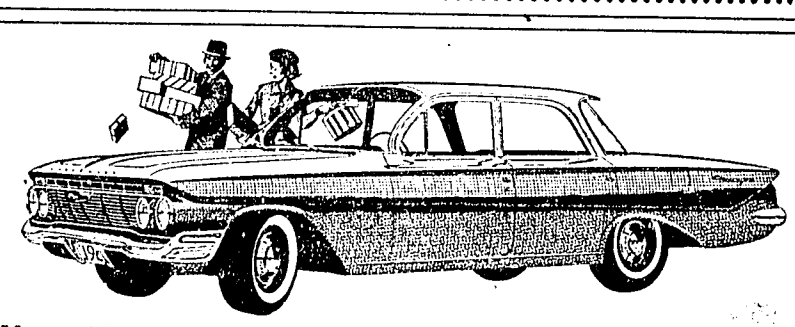
New lower priced '61 CORVAIR 700 CLUB COUPE

There's a whole crew of new Chevy Corvairs for '61—polished and perfected to bring you spunk, space and savings. Lower priced sedans and coupes offer nearly 12% more room under the hood for your luggage—and you can also choose from four new family-lovin' wagons.



New '61 Chevrolet BEL AIR SPORT SEDAN

Beautiful Bel Airs, priced just above the thriftiest full-size Chevies, bring you newness you can use: larger door openings, higher easy-chair seats, more leg room in front, more foot room in the rear, all wrapped up in parkable new outside dimensions.



New '61 Chevrolet 4-DOOR BISCAYNE 6

NOW—BIG-CAR COMFORT AT SMALL-CAR PR.CES—Chevy's new Biscaynes, 6 or V8, are built to save in a big way. They offer a full measure of Chevrolet quality, roominess and proved performance, yet they are priced right down with many cars that give you a lot less.

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Sports Revival?

A little over a month and a half ago I wrote an article sounding out in no uncertain terms the technology students for their apparent disinterest in anything that the engineering societies tried to do for them in the way of sport activities. My column was slanted towards basketball and whether or not the societies should try to revive the old slide rule league. It ended by asking the student if they wanted to play basketball in the coming term or not.

The answers that I received were not what I had expected. I expected them to be as strong or stronger that the column was itself. Instead I had people tell me that I was right. People wrote and told me that they were interested in starting the slide rule league again and asking me how to go about doing it. Why are we getting a response now when none was had before? I think that it is due to the increasing membership of the societies and increasing interest of the membership in the slide rule league.

The different societies would like to start the league again next term. All they want though is your response. By your letters you have shown me that you want the league. Now show them. Bring up the subject at the meetings of your society and find out how many people are interested. But, more important **volunteer to play.** A society cannot field a team on interest alone. Enough of you have to be willing to go out and play the game.

I ended the last column with a question and I am going to do the same in this one. The societies are more than willing to start the league again. Some of you have said you are interested. But are there enough of you interested enough to volunteer to play?

Remember Way Back When . . .

How We Rate

(Continued from Page 4)

there. The students at the University are not as informal and carefree as at the College. Columbia doesn't have many clubs and most of the social life revolves about the fraernities. If he had the choice of attending either of the two Colleges (assuming both would charge the same tuition), he replied that he would certainly choose "City."

Murray Ruben, pre-engineering, from Queens College finds the competition tougher but thinks that in City, the grading is easier. "There is no curving in Queens," he said, "and if you had an 88 average, you will get a B even if your grade is the highest in the class. He added, "There are not enough lounges in which you can sit and talk since everything is in Finley Center. The Technology students don't get much use out of Finley Center." Queens College campus is much nicer than our College campus and also no busses and cars run through the middle of the Queens College campus.

What is your opinion?

Israel . . .

(Continued from Page 3)

this new and famed institution, "The Technion, Israel Institute of Technology, is still one of the cornerstones) of Israel's development. . . . We stand, too, on the threshhold of great new developments in the eld of atomic energy for peaceful purposes, and we look to the Technion to make available the steady supply of trained manpower which is vital to . . . our efforts.

Trip . . .

(Continued from Page 1)

will be first come, first served. The IBM trip must, unfortunately, be open only to EE students. The Con Edison trip is open to all students of the engineering school and will allow the students to see what a power plant is like while it is being built. They are presently installing a 375,000 Kilowatt generator, one of the largest ever built.

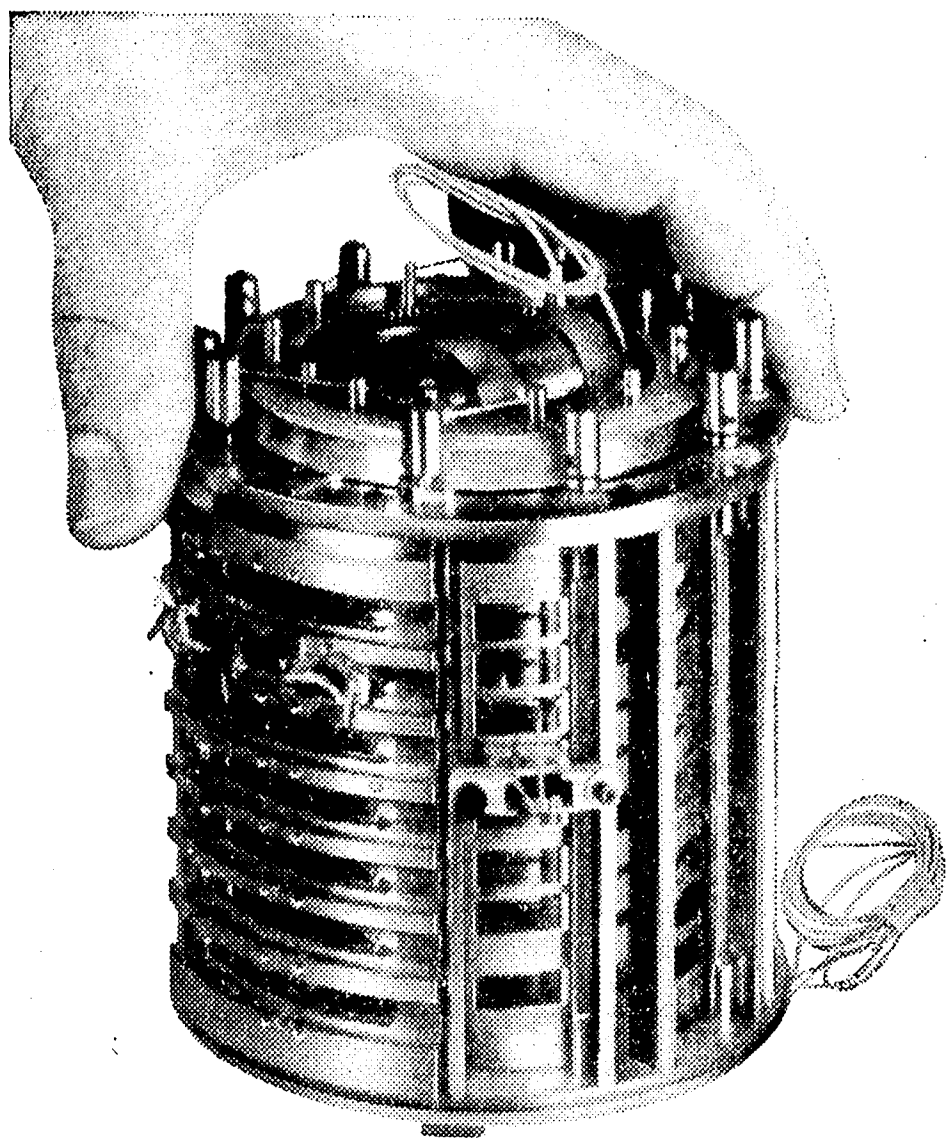
TASTE . . .

(Continued from Page 1)

will among these potential leaders and the host companies."

The participating countries are Argentina, Austria, Belgium, Canada, Ceylon, Denmark, Finland, France, Germany. Others are Great Britain, Greece, Iceland, India, Israel, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden and Switzerland. More countries participating are Tunisia, Turkey, The Union of South Africa, United States and Yugoslavia.

The staff of TECH NEWS wishes to congratulate Larry Kowitt on his engagement to Miss Susan Weinberger.



TINY MEMORY UNIT GUIDES GIANT ROCKETS INTO SPACE

On this tiny drum, only four and one-half inches in diameter, is recorded all the significant data needed to direct a rocket into space.

As the rocket blasts skyward, the electronic computer, which includes this small memory unit, begins to monitor the flight. The computer continually correlates data on flight progress with data in the memory unit and makes course corrections instantly.

The very small size and weight of this memory unit is an achievement in itself. Yet other difficult problems had to be overcome—shock, prolonged vibration and extremely high G forces. Only by using new materials and design techniques were these problems solved.

People with backgrounds in the sciences, engineering, and liberal arts all contributed to the success of this project. Ideas which create new products can come from anywhere at IBM. From research, development, programming, manufacturing, marketing.

If you would like a job where your ideas can be put to work in interesting and important areas, then you should consider the many opportunities at IBM. The IBM representative will be interviewing on your campus. He will be glad to discuss career openings at IBM. Your placement officer can make an appointment. Or you may write, outlining background and interests, to: **Director of Technical Recruitment, Dept. 897, IBM Corporation, 590 Madison Avenue, New York 22, N. Y.**

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AIEE Makes a Long Tour of Indian Poin

By PHILIP GREENBERG

On Saturday, Dec. 10, bright and early in the morning, about 75 students from Columbia University, New York University, City College, Pratt Institute, Manhattan College, and Newark College of Engineering met in front of the Consolidated Edison building on Irving Place and climbed aboard buses which were to take them to a new world, the world of atomic energy and electricity generating stations.

After traveling for about an hour, the students arrived at Indian Point and were ushered into an observation building in which they were told what they were going to see during the day. A film about the construction phases of the atomic plant and an operating model of the atomic core (and the control rod setup in the core) was shown. The students were shown that if an accident takes place in the reactor, the Hafnium control rods would drop by gravity to stop the chain reaction.

Explosion Discussed

The danger of the reactor exploding was also discussed. It seems that in an atomic plant, the reactor is on a different design than that of an atomic bomb. In a bomb, fissionable materials are held together for a certain time in order for a chain reaction to take place. This is called implosion. In the nuclear reactor the Uranium-235 enriched fuel elements are separated in discrete places in the core and therefore there is no danger of explosion of the whole core. It is possible, however, that one small part of the core might explode but this explosion would separate the core materials even more and therefore the danger of the complete reactor core blowing up is zero. In fact, the engineers present said that it is very difficult to start the nuclear reactor. The reactor itself is initially started by inserting a slow neutron source into the core and then drawing out the control rods. After the reaction is self sustaining, the neutron source is withdrawn.

Core Material

The fissionable material is rented from the Atomic Energy Commission which takes back the spent fuel and reconditions it. Included in the fuel is cheap thorium-232 which when irradiated turns to Uranium 233, a fissionable material. The Uranium and thorium in oxide form are mixed and formed into pellets. The pellets are encased in stainless steel tubes. 200 of the tubes are fastened to make fuel element. Each element is 11½ feet long and six inches square. The cost for the fuel elements is determined after the AEC sees how much fissionable material is left in the spent fuel elements. Con Edison engineers have calculated that the reactor will have to be shut down after a little more than two years for a refueling. This time comes from theoretical study and from a study of the shippingport reactor. During this refueling time the other Con Ed generating stations will share the load normally drawn from the Indian Point Station.

The Reactor Container

When one approaches the reactor he is overcome by the immense size of the power station. At the entrance to the reactor compartment we were issued orange Con Ed helmets and told to be carefully for falling objects. The station is still under construction and will not be completed until 1962. Entering the reactor compartment on the ground level we found ourselves in the center of a 160 foot diameter steel sphere. The containing sphere is built with most of the sphere below ground level. Slightly off the center line of the sphere, is the reactor which was built by Babcock and Wilcox. The reactor takes up about two floors of the sphere. On the top level is a gantry crane which is mounted on a circular track which allows the crane to be moved in any position. The main purpose of this crane is in the refueling operation of the reactor. There is a hole in the floor from which you can look down on the reactor and a slot in the floor that connects this hole with another one in which the spent fuel elements are transferred. This transference occurs on the way to a cooling down period in which the short life isotopes decay.

The Reactor

The reactor is of the PWR (pressurized water reactor) type in which water is used as the primary coolant. The Con Edison engineers had to develop new methods to make sure that the impurities in the water did not rise over a certain amount since the coolant harms the reactor core. Another reason for extreme cleanliness results from the fact that pure water will not become radioactive but the impurities in the water can become radioactive. (The water is obtained from nearby Croton Reservoir.) At the side of the reactor is a complex of pipes which draw off a small amount of the coolant which is then sent to the "hot lab" in the adjoining building to be tested for radioactivity. The primary coolant water is circulated through the reactor core and the four hairpin heat exchangers by four 2,000 volt, 1,000 ampere canned pumps. The water is circulated through the reactor at 1,500 pounds per square inch pressure and is heated to 519 degree Farenheit. The primary coolant heats up the secondary coolant (also water) in the hairpin condensers. This turns the water immediately to steam. In the drum, the steam is dried by passing it through steam separators. In the saturated state at a temperature of 449 degrees Fahrenheit and at a pressure of 405 psi it flows to the superheaters in the adjoining building. The steel sphere also encloses tanks for make-up water and tanks where the water that is drained from the reactor core can stay. Coming in through one of the many entrances in the steel sphere is a railroad track which brought the reactor vessel and the hairpin condensers into the sphere. We were told that when the reactor will be turned on no one will be allowed into the sphere. Not only because of the danger of radiation but also due to the reactor being at a temperature which will heat up the inside of the sphere to about 140 degrees Farenheit in the shade.

Refueling

When the reactor fuel is to be changed, the compartment surrounding the reactor, the slot and the cavity in which the 12 foot fuel elements will be transferred to the decay chamber will be completely flooded with water from tanks located inside the sphere. This will all be done by remote control. There are 120 fuel elements in the reactor and these will be withdrawn in a certain order, two at a time. After they are transferred from the reactor each goes to its own rack in the decay chamber. All of the operation in setting the fuel elements into its own rack will be done with the aid of **television cameras** which are located all over the containing sphere.

Generating Building

Adjoining the reactor sphere is a large building which contains the power generating apparatus which is essential for the generation of electricity, the health safety laboratories, and the control room.

The building has three brick walls and a fourth which is made of corrogated aluminum. The reason for the use of an aluminum wall is that Con Ed plans to build an identical reactor in the future right next to the present one. Engineers decided that instead of building another structure for the turbine and superheaters of the new reactor they would simply take off the aluminum wall and add bricks to the present wall extending the building and saving the cost of two walls. This idea of construction has been used before by Con Ed and been carried out to four buildings at the new Astoria Power plant which is one of the biggest coal burning stations in the world.

New Size Used

Usually the building which contains boilers and superheaters is about the height of a fifteen story building, but since the boilers have to be omitted in the Indian Point plant, the building is much smaller since the height is determined by the size of the oil-fired superheaters. In the superheaters, the steam is raised to 1,000 degrees Fahrenheit and 350 psi. The steam is superheated because the saturated steam would cause a decrease in efficency of the plant by about 40% off the power output of 275,000 kilowatts. Another reason for superheating is the pitting of the turbine blades by saturated steam which would cause the plant to shut down every two weeks for a new set of turbine blades.

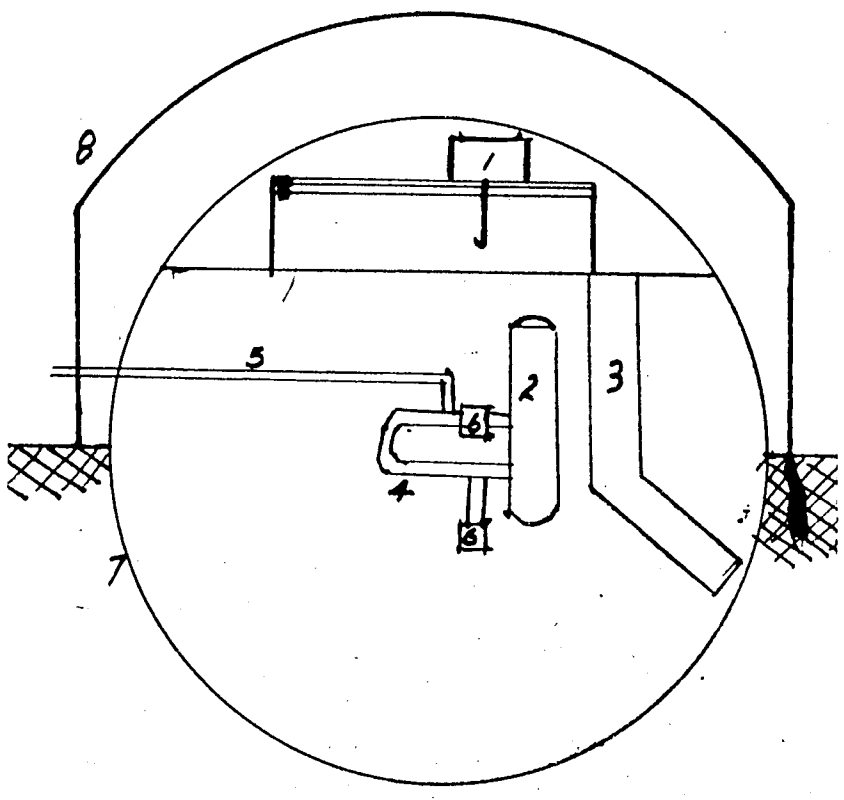
Single Shaft Used

The turbine has its high and low pressure stages on the same shaft making it the largest turbine in the United St The Astoria turbine deve 375,000 kilowatts by using dem turbines. The tu turns a 275,000 kilowatt inghouse Synchronous Ge tor which is the largest g ator made by Westingh The rotor winding of the erator is supplied by a D.C of Con Ed. which is bro from the city up the Hu River for 35 miles undergr to protect it from storms. **engineers said that if the line was ever interrupted, plant would have its capabilities for producing necessary D.C. current.** stator terminals of the ge tor are brought on the floo low the generator through foot long insulators. The age at the generator is about 13,600 volts. Since use of such a low voltage o power line to the City wou wasteful, the low voltag brought to a pair of Fer oil-cooled transformers w raises the generator voltag **138,000 volts.** This high vo is then connected to the through a pair of air-blast cuit breakers. The insul for the 138,000 volt lines about six feet tall. Also cluded in the switch gear switch for taking the plan the line which is about feet long. The 275,000 watts generated is not pletely sent out on the t mission line because about percent of the output is ne for operation of the plant.

(*Continued on Page 2*)

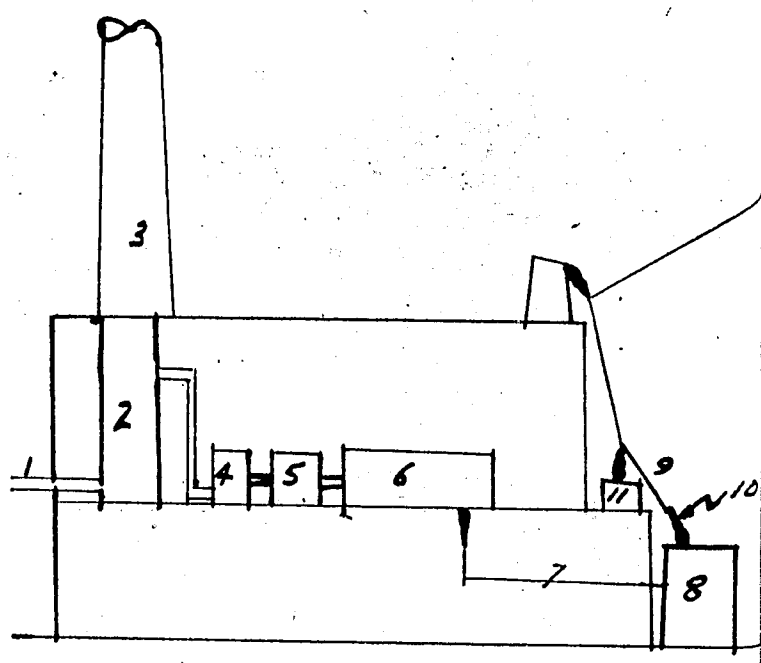
Health Labs

There are two health s laboratories in the adjoi building to the reactor sp In each room there are coming from all parts of sphere which will be fe instruments which will mea and record data on the am of radioactivity present in sphere, the temperature of water in the settling tanks radioactivity in the secon coolant, will be also meas



1- GANTRY CRANE
2- REACTOR VESSEL
3. SPENT FUEL DECAY CHAMBER
4- HAIRPIN HEATEXCHANGER
5. STEAM FOR SUPERHEATER
6. CANNED PUMPS
7. STEEL SPHERE
8- CONCRETE DOME

figure one.



1- STEAM FROM CONDENSOR
2 SUPERHEATER
3. 470 FOOT CHIMNEY
4. HIGH PRESSURE TURBINE
5. LOW PRESSURE TURBINE
6. SYNCHRONOUS 275,000 KW GENERATO
7. 13,600 VOLT LINE
8. TRANSFORMER
9. 138,000 VOLT LINE
10. INSULATORS
11. SWITCH GEAR

figure two